

PATENT COOPERATION TREATY

BAKER BOTTS L.L.P.

From the INTERNATIONAL SEARCHING AUTHORITY

00 OCT 10 AM 11:46

To: HENRY TANG
BAKER BOTTS LLP
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112-0228

PCT TO

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Date of Mailing
(day/month/year)

04 OCT 2000

Applicant's or agent's file reference

31852-PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/US00/40175

International filing date
(day/month/year)

08 JUNE 2000

Applicant

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

Docketed
For 12/4/2000
RS

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

PAUL KANG

Telephone No. (703) 305-9000

Form PCT/ISA/220 (July 1998)*

(See notes on accompanying sheet)

X Copy to Search Report & Remarks in Pockets

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 31852-PCT	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> FOR FURTHER ACTION </div> <div> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. </div> </div>	
International application No. PCT/US00/40175	International filing date (<i>day/month/year</i>) 08 JUNE 2000	(Earliest) Priority Date (<i>day/month/year</i>) 08 JUNE 1999
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 1

- ☐ as suggested by the applicant.
- ☒ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☐ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

A network appliance (100) is provided having a network controller (Fig. 1) subsystem (110) for coupling the appliance (100) to a data network for providing and receiving data packets to and from a packet data network. A digital signal processing subsystem (120) is coupled to the network controller subsystem (110). A signal conversion subsystem (130) is coupled to the digital signal processing subsystem (120) and a user interface subsystem (160) is coupled to both the signal conversion subsystem (130) and the digital signal processing subsystem (120). The digital signal processing subsystem (120) operates under the control of a computer program which is capable of detecting incoming calls, initiating call sessions, and preferably, implementing advanced telephony features.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/40175

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04L 12/66; G06F 17/00, 15/16

US CL : 370/352; 709/204, 227, 231

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/352; 709/204, 227, 231

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

East

search terms: internet intranet telephony ARP UDP DSP

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 5,867,495 A (ELLIOTT et al) 02 FEBRUARY 2000, col. 1, lines 5-34, col. 8, line 28 - col. 9, line 53.	1-56
Y,P	US 6,009,469 A (MATTAWAY et al) 28 DECEMBER 1999, col. 1, line 60 - col. 3, line 27.	1-65

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

11 SEPTEMBER 2000

Date of mailing of the international search report

04 OCT 2000

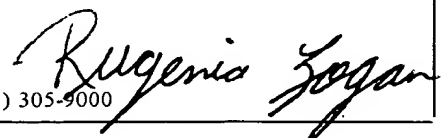
Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

PAUL KANG

Telephone No. (703) 305-9000



NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty and of the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

The claims only.

The description and the drawings may only be amended during international preliminary examination under Chapter II.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

What documents must/may accompany the amendments ?

Letter (Section 285(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confounded with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

NOTES TO FORM PCT/ISA/220 (continued)

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-20 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

The statement should be brief, it should not exceed 500 words if in English or if translated into English.

It should not be confounded with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)".

It should not contain any disparaging comments on the international search report or the relevance of citations contained in that report. References to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

In what language?

The amendments must be made in the language in which the international application is published. The letter and any statement accompanying the amendments must be in the same language as the international application if that language is English or French; otherwise, it must be in English or French, at the choice of the applicant.

Consequence if a demand for international preliminary examination has already been filed?

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(e), first sentence).

Consequence with regard to translation of the international application for entry into the national phase?

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT/US00/40175

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NOTIFICATION OF RECEIPT OF RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

BAKER BOTTS L.L.P.

TANG, Henry
Baker Botts LLP
30 Rockefeller Plaza
New York, NY 10112-0228
ETATS-UNIS D'AMERIQUE

00 SEP 11 PM 2: 12

TO

[Handwritten signature]

Date of mailing (day/month/year) 01 September 2000 (01.09.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 31852-PCT	International application No. PCT/US00/40175

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK (for all designated
States except US)

SCHULZRINNE, Henning et al (for US)

International filing date : 08 June 2000 (08.06.00)
Priority date(s) claimed : 08 June 1999 (08.06.99)
Date of receipt of the record copy
by the International Bureau : 07 August 2000 (07.08.00)
List of designated Offices :

AP : GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES,
FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,
VN, YU, ZA, ZW

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer: Fiona DOHERTY Telephone No. (41-22) 338.83.38
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Continuation of Form PCT/IB/301

NOTIFICATION OF RECEIPT OF RECORD COPY

Date of mailing (day/month/year) 01 September 2000 (01.09.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 31852-PCT	International application No. PCT/US00/40175

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase
- ☐ confirmation of precautionary designations
- ☒ requirements regarding priority documents

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated in the Notification of Receipt of Record Copy (Form PCT/IB/301) by paying national fees and furnishing translations, as prescribed by the applicable national laws.

The time limit for performing these procedural acts is **20 MONTHS** from the priority date or, for those designated States which the applicant elects in a demand for international preliminary examination or in a later election, **30 MONTHS** from the priority date, provided that the election is made before the expiration of 19 months from the priority date. Some designated (or elected) Offices have fixed time limits which expire even later than 20 or 30 months from the priority date. In other Offices an extension of time or grace period, in some cases upon payment of an additional fee, is available.

In addition to these procedural acts, the applicant may also have to comply with other special requirements applicable in certain Offices. It is the applicant's responsibility to ensure that the necessary steps to enter the national phase are taken in a timely fashion. Most designated Offices do not issue reminders to applicants in connection with the entry into the national phase.

For detailed information about the procedural acts to be performed to enter the national phase before each designated Office, the applicable time limits and possible extensions of time or grace periods, and any other requirements, see the relevant Chapters of Volume II of the PCT Applicant's Guide. Information about the requirements for filing a demand for international preliminary examination is set out in Chapter IX of Volume I of the PCT Applicant's Guide.

GR and ES became bound by PCT Chapter II on 7 September 1996 and 6 September 1997, respectively, and may, therefore, be elected in a demand or a later election filed on or after 7 September 1996 and 6 September 1997, respectively, regardless of the filing date of the international application. (See second paragraph above.)

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date. If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with an indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity to furnish the priority document within a time limit which is reasonable under the circumstances.

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

PATENT COOPERATION TREATY

31852
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From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To: BAKER BOTTS L.L.P.
00 OCT 11 PM 12:41
TANG, Henry
Baker Botts LLP
30 Rockefeller Plaza
New York, NY 10112-0228
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 27 September 2000 (27.09.00)	
Applicant's or agent's file reference 31852-PCT	IMPORTANT NOTIFICATION
International application No. PCT/US00/40175	International filing date (day/month/year) 08 June 2000 (08.06.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 08 June 1999 (08.06.99)
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK et al	

- The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
- An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
08 June 1999 (08.06.99)	60/138,832	US	16 Augu 2000 (16.08.00)

COPY TO
HCU

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer Tessadel PAMPLIEGA Tdp Telephone No. (41-22) 338.83.38
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PATENT COOPERATION TREATY

WO 00/76158
PCT/US00/40175

31852
PCT

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:	TANG, Henry Baker Botts LLP 30 Rockefeller Plaza New York, NY 10112-0228 ETATS-UNIS D'AMERIQUE
	BAKER BOTTS L.L.P. 00 DEC 28 AM 11:06

Date of mailing (day/month/year) 14 December 2000 (14.12.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference 31852-PCT			
International application No. PCT/US00/40175	International filing date (day/month/year) 08 June 2000 (08.06.00)	Priority date (day/month/year) 08 June 1999 (08.06.99)	
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
AG,AU,DZ,KP,KR,MZ,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,
GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,
NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
14 December 2000 (14.12.00) under No. WO 00/76158

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Annex I of the PCT Applicant's Guide.

For 218 /2001 By

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

Encl. rocket

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line

IPEA/ US

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only

Identification of IPEA		Date of receipt of DEMAND	
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION			Applicant's or agent's file reference 31852-PCT
International application No. PCT/US00/40175	International filing date (day/month/year) 08 June 2000 (08.06.00)	(Earliest) Priority date (day/month/year) 08 June 1999 (08.06.99)	
Title of invention NETWORK TELEPHONY APPLIANCE AND SYSTEM FOR INTER/INTRANET TELEPHONY			
Box No. II APPLICANT(S)			
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK 116th Street and Broadway New York, NY 10027 US		Telephone No.:	
		Facsimile No.:	
		Teleprinter No.:	
State (that is, country) of nationality: US		State (that is, country) of residence: US	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) SCHULZRINNE, HENNING 313 Westview Avenue Leonia, NJ 07605 US			
State (that is, country) of nationality: DE		State (that is, country) of residence: US	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) YIN, JIANQI 16-121 Woodridge Crescent Nepean, ON K2B 7T2 CA			
State (that is, country) of nationality: CN		State (that is, country) of residence: CA	
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.			

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s) /common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official
The address must include postal code and name of country.)*TANG, HENRY and
ACKERMAN, PAUL D.
Baker Botts LLP
30 Rockefeller Plaza
New York, NY 10112-0228
USTelephone No.:
(212) 408-2586Facsimile No.:
(646) 282-9698

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed.the description ☐ as originally filed☐ as amended under Article 34the claims ☐ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34the drawings ☐ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**

The applicant hereby elects all eligible States (that is, all States which have been designated and which are bound by Chapter II of the PCT)

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|---|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (<i>specify</i>) | : | sheets |

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received not received


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<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

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| 1. <input checked="" type="checkbox"/> fee calculation sheet | 4. <input type="checkbox"/> statement explaining lack of signature |
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Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



 Paul D. Ackerman (Agent)

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1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

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Demand received from IPEA on:

PCT

FEE CALCULATION SHEET

Annex to the Demand for international preliminary examination

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">International application No.</td> <td style="width: 50%;">PCT/US00/40175</td> </tr> <tr> <td>Applicant's or agent's file reference</td> <td>31852-PCT</td> </tr> </table>	International application No.	PCT/US00/40175	Applicant's or agent's file reference	31852-PCT	<div style="border: 1px solid black; padding: 5px;"> For International Preliminary Examining Authority use only </div> <div style="border: 1px solid black; padding: 5px; height: 100px;"> Date stamp of the IPEA </div>
International application No.	PCT/US00/40175				
Applicant's or agent's file reference	31852-PCT				
Applicant THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK					
Calculation of prescribed fees					
1. Preliminary examination fee	<div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">490.00</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 5px; margin-left: 5px;">P</div>				
2. Handling fee <i>(Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.)</i>	<div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">137.00</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 5px; margin-left: 5px;">H</div>				
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box	<div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">627.00</div>				
<div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">TOTAL</div>					
Mode of Payment					
<input type="checkbox"/> authorization to charge deposit account with the IPEA (see below)	<input type="checkbox"/> cash				
<input checked="" type="checkbox"/> cheque	<input type="checkbox"/> revenue stamps				
<input type="checkbox"/> postal money order	<input type="checkbox"/> coupons				
<input type="checkbox"/> bank draft	<input type="checkbox"/> other (specify):				
Deposit Account Authorization <i>(this mode of payment may not be available at all IPEAs)</i>					
The IPEA/ <u>US</u> <input type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.					
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02-4377	5 January 2001				
Deposit Account Number	Date (day/month/year)				
<div style="text-align: right;"> </div> Signature					

01 JUN -4 PM 12:17

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

TO

To:
HENRY TANG
BAKER BOTTS LLP
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112 0228

NOTIFICATION OF RECEIPT
OF DEMAND BY COMPETENT INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))

Date of mailing
(day/month/year)

30 MAY 2001

Applicant's or agent's file reference

31852-PCT

IMPORTANT NOTIFICATION

International application No.

PCT/US00/40175

International filing date (day/month/year)

08 JUN 00

Priority date (day/month/year)

08 JUN 99

Applicant

THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF

1. The applicant is hereby **notified** that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

05 JAN 01

2. That date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
- ☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
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3. ☐ **ATTENTION:** That date of receipt is **AFTER** the expiration of 19 months from the priority date. Consequently, the election(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the *PCT Applicant's Guide*, Volume II.

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Crescent, Nepean, Ontario K2B 7T2 (CA).

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(71) Applicant (*for all designated States except US*): THE
TRUSTEES OF COLUMBIA UNIVERSITY IN THE
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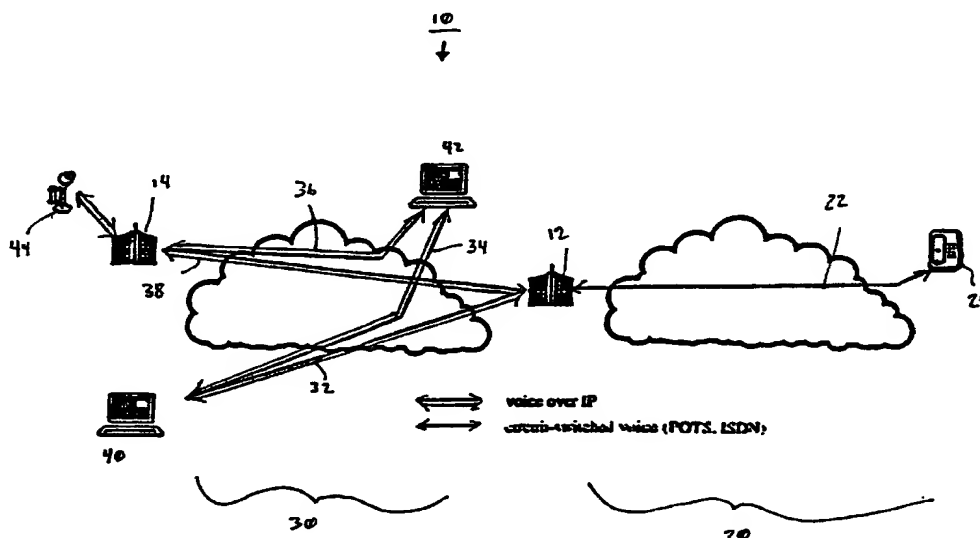
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(54) Title: NETWORK TELEPHONY APPLIANCE AND SYSTEM FOR INTER/INTRANET TELEPHONY



(57) Abstract: A network appliance (100) is provided having a network controller subsystem (110) for coupling the appliance (100) to a data network for providing and receiving data packets to and from a packet data network. A digital signal processing subsystem (120) is coupled to the network controller subsystem (110). A signal conversion subsystem (130) is coupled to the digital signal processing subsystem (120) and a user interface subsystem (160) is coupled to both the signal conversion subsystem (130) and the digital signal processing subsystem (120). The digital signal processing subsystem (120) operates under the control of a computer program which is capable of detecting incoming calls, initiating call sessions, and preferably, implementing advanced telephony features.

WO 00/76158 A1



— Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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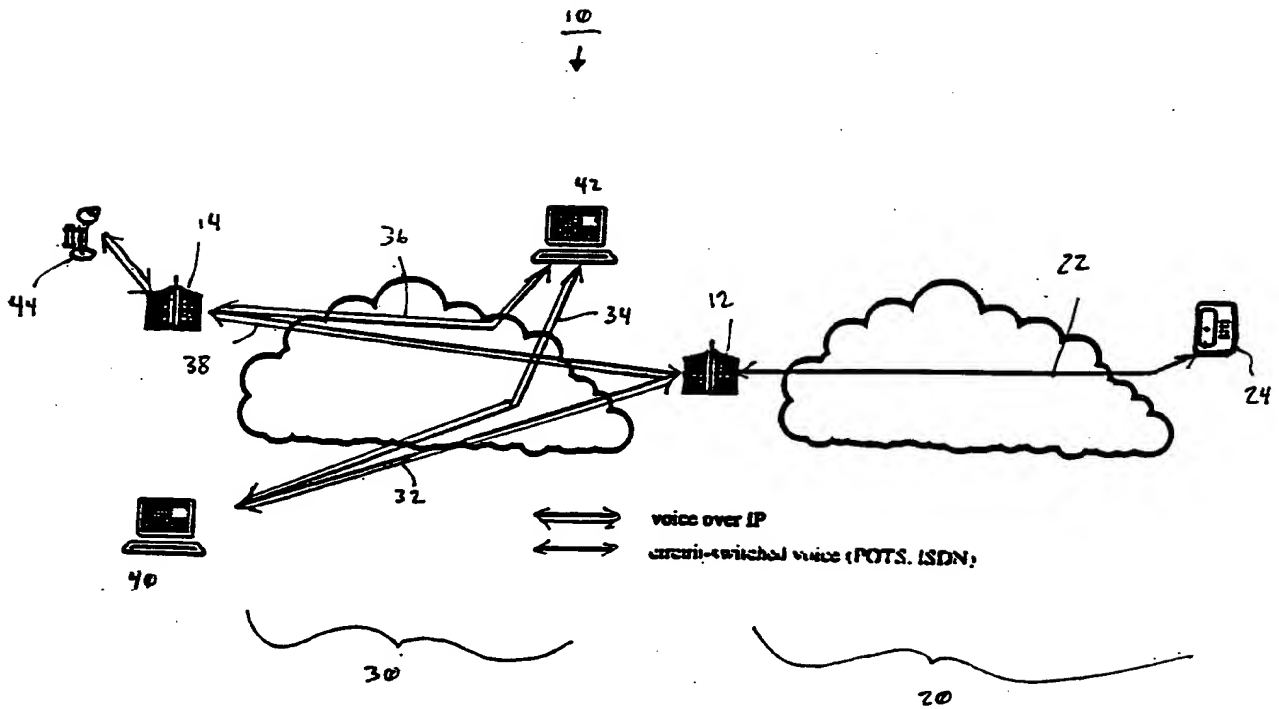


FIG. 1

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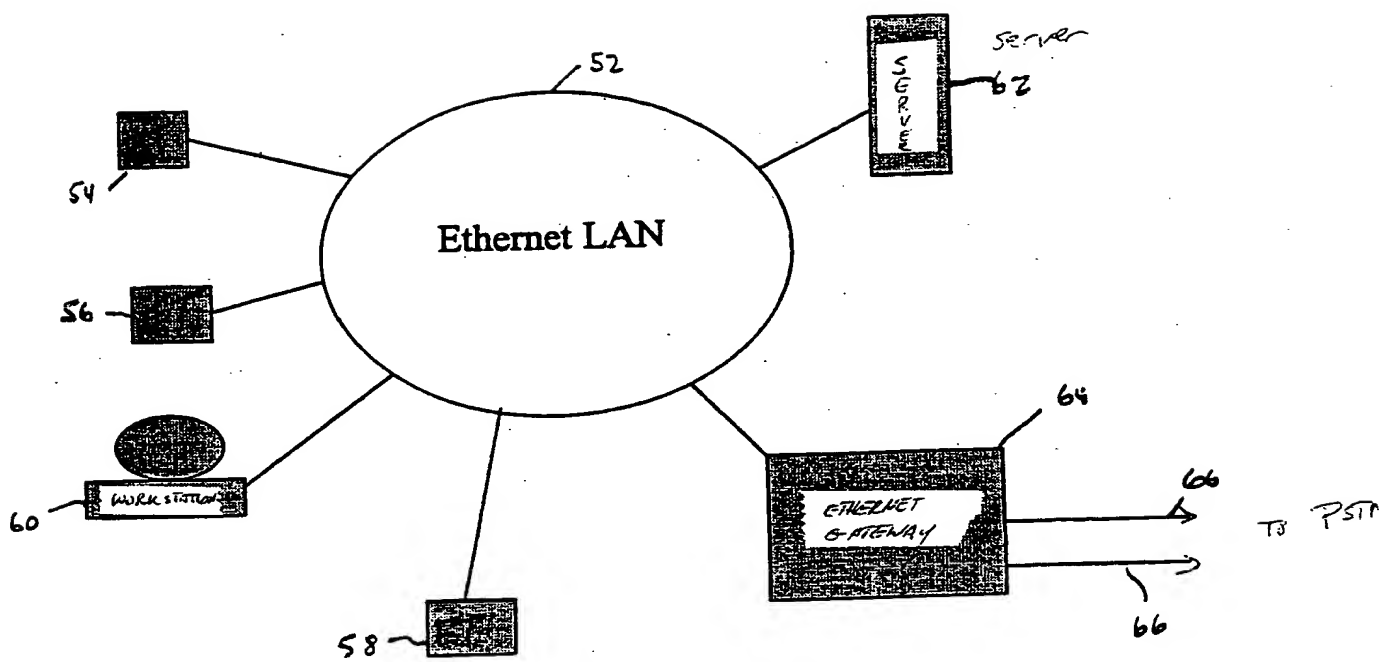


FIG. 2

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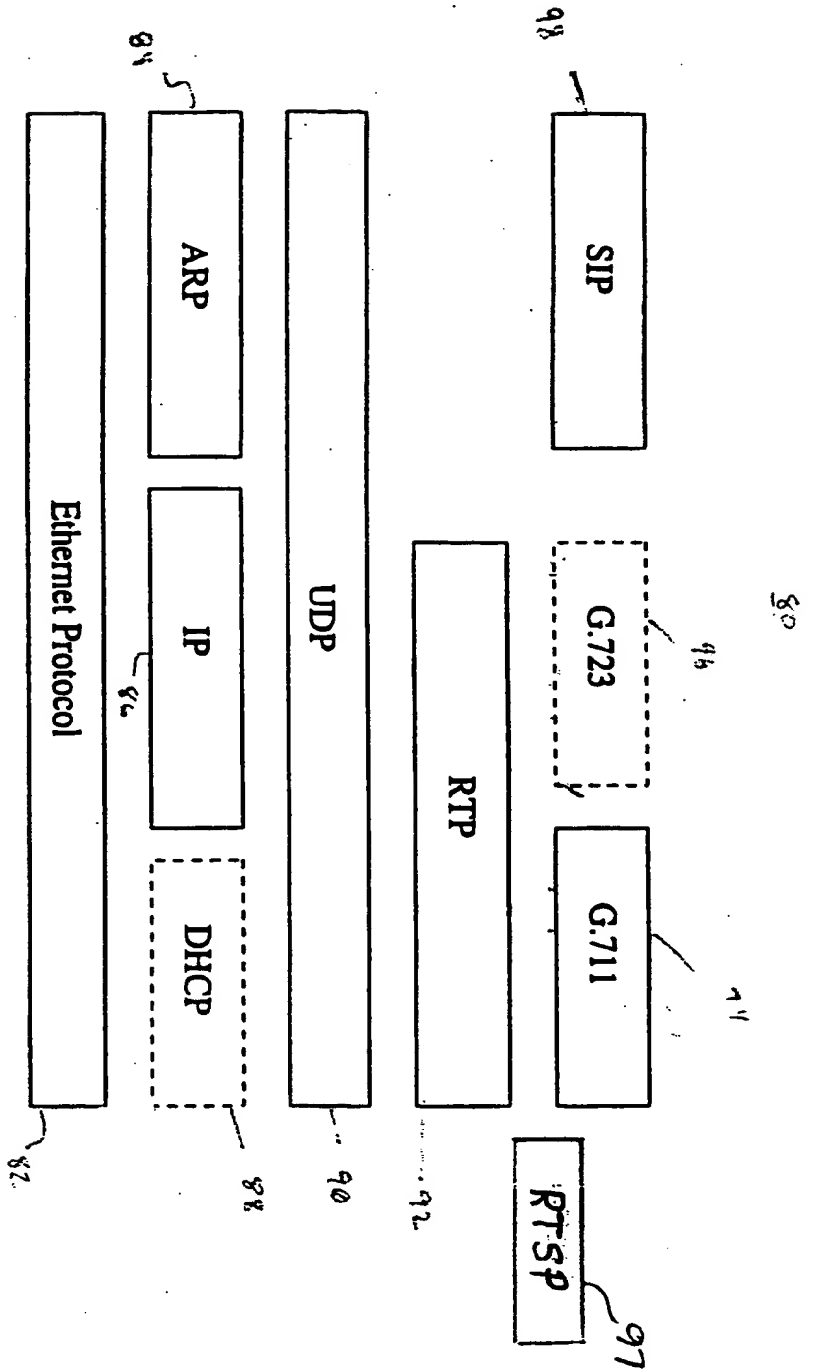
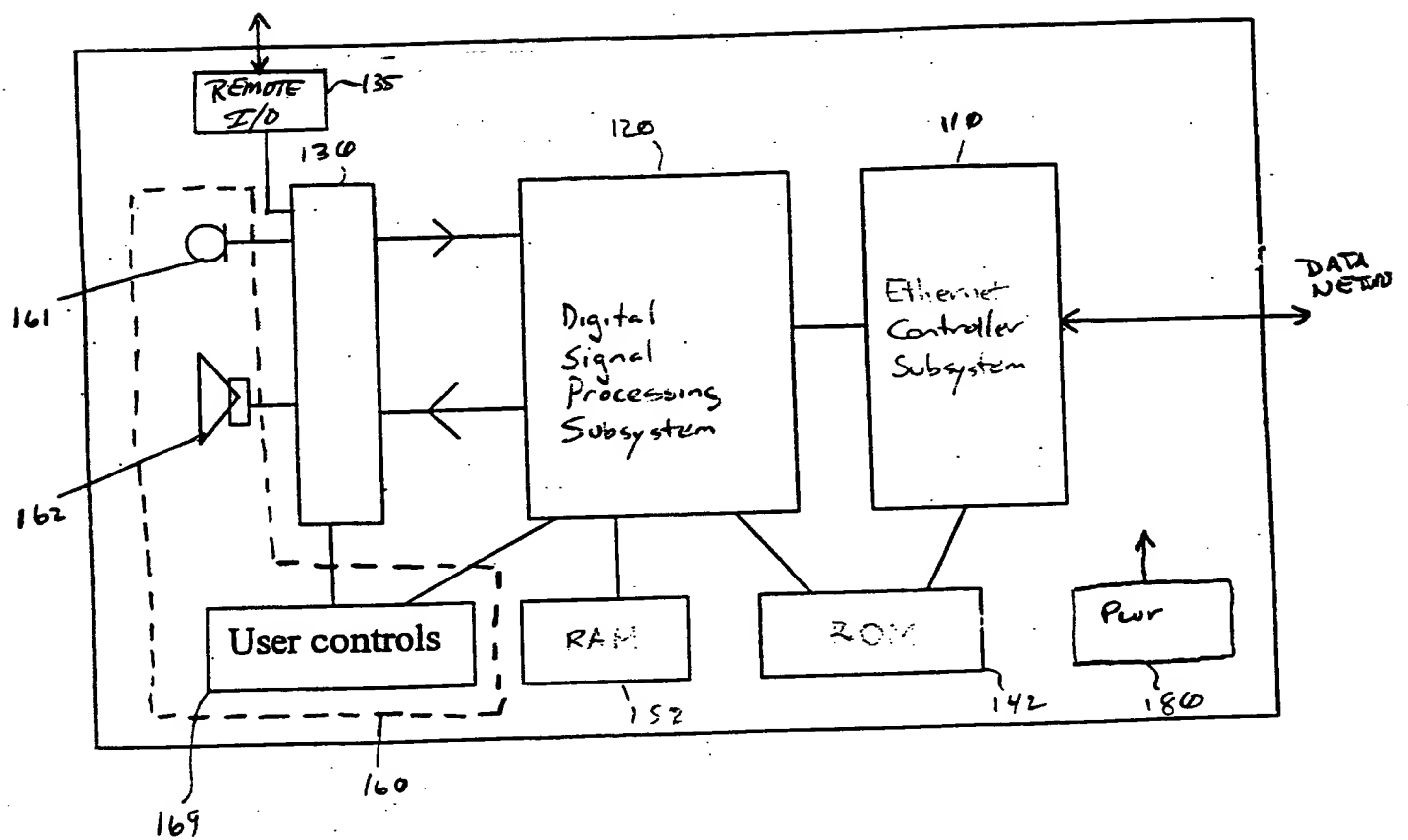


FIG. 3

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100FIG. 4

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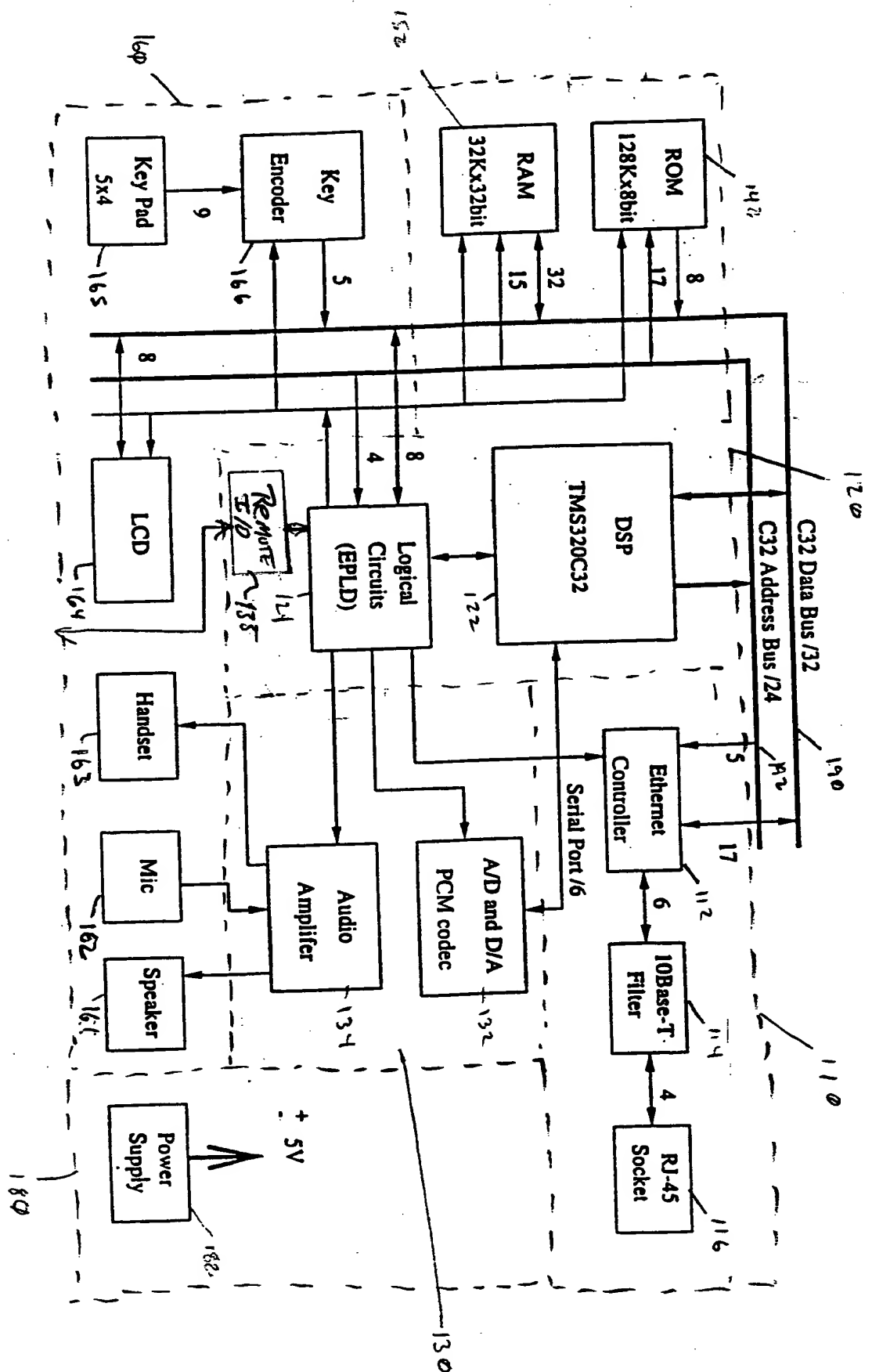


FIG. 5

C/33

DSP Address	Length (hex)	(dec.) Usage
0x1000	0xB000	128K ROM
0x20000	0x10	16 LCD
0x810000	0x20	32 Ethernet controller
0x820000	0xf	16 Keypad read, audio amplifier, control, hook control, system software reset
0x87fe00	0x200	512 Internal RAM
0x900000	0x8000	32K External Ram

FIG. 6 DSP memory map

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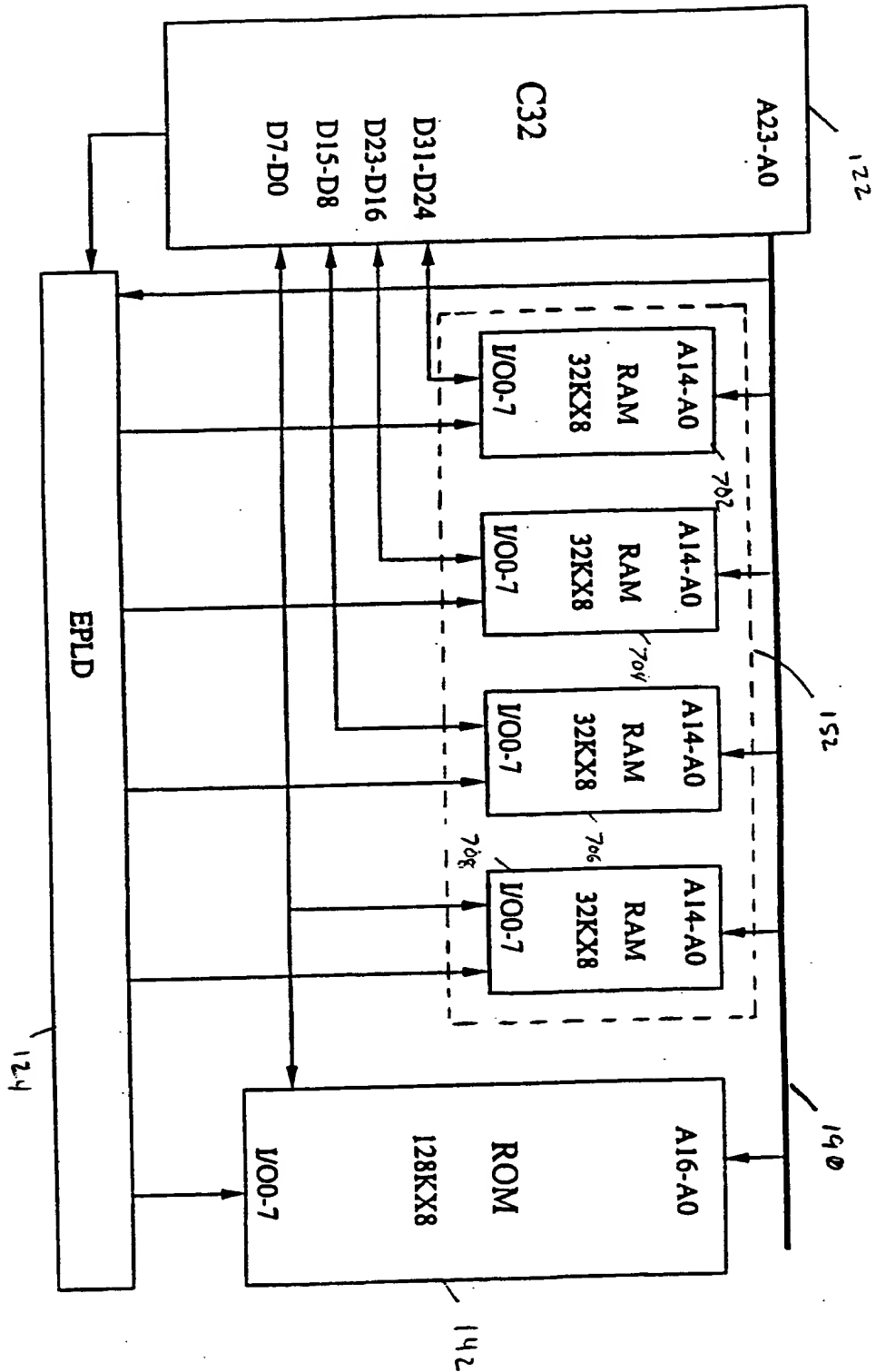


FIG. 7

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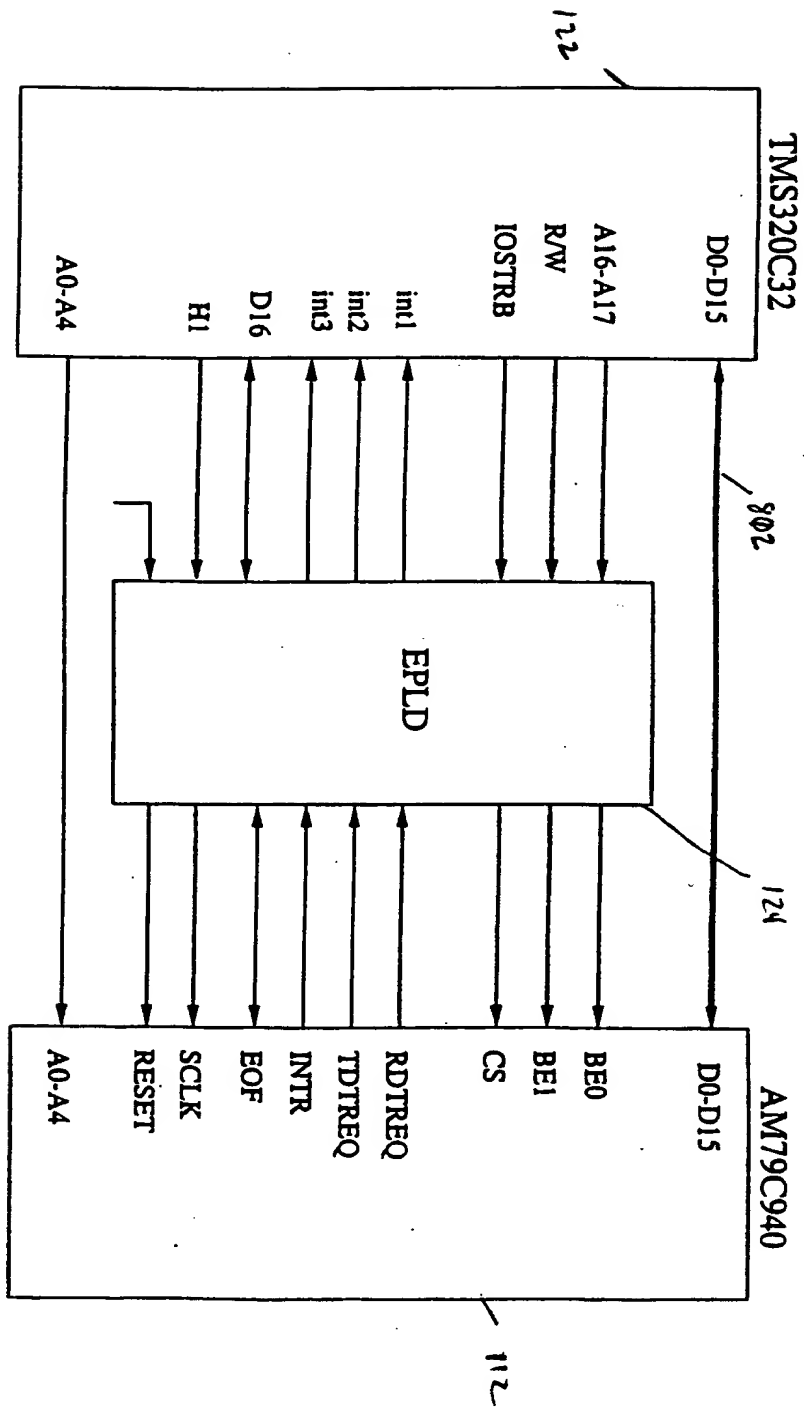
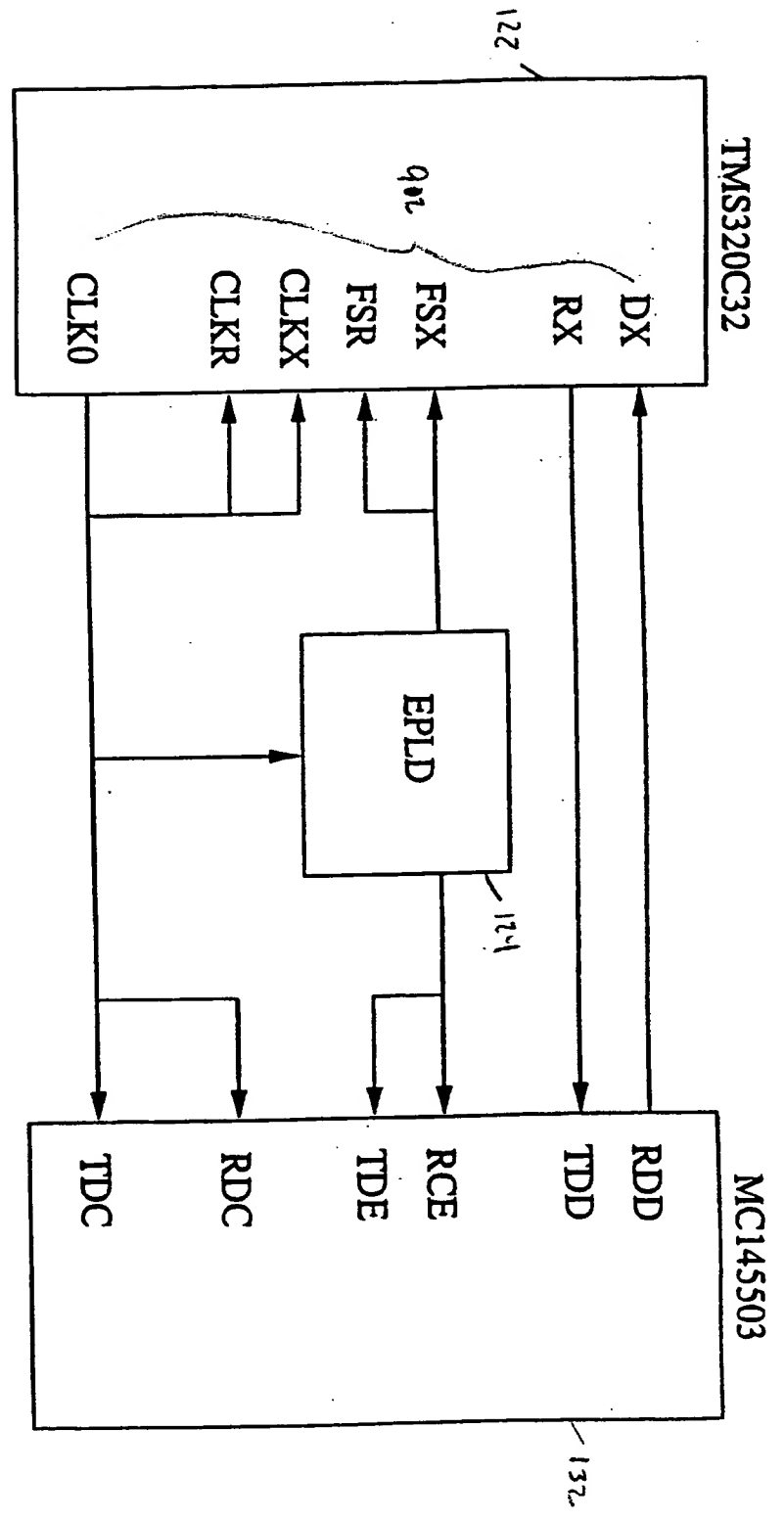


FIG. 8

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900

FIG. 9

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DSP Address	Usage
0x2000	Command port for left-half of LCD
0x20001	Data port for left-half of LCD
0x2002	Command port for right-half of LCD
0x2003	Data port for right-half of LCD

FIG. 10

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1100

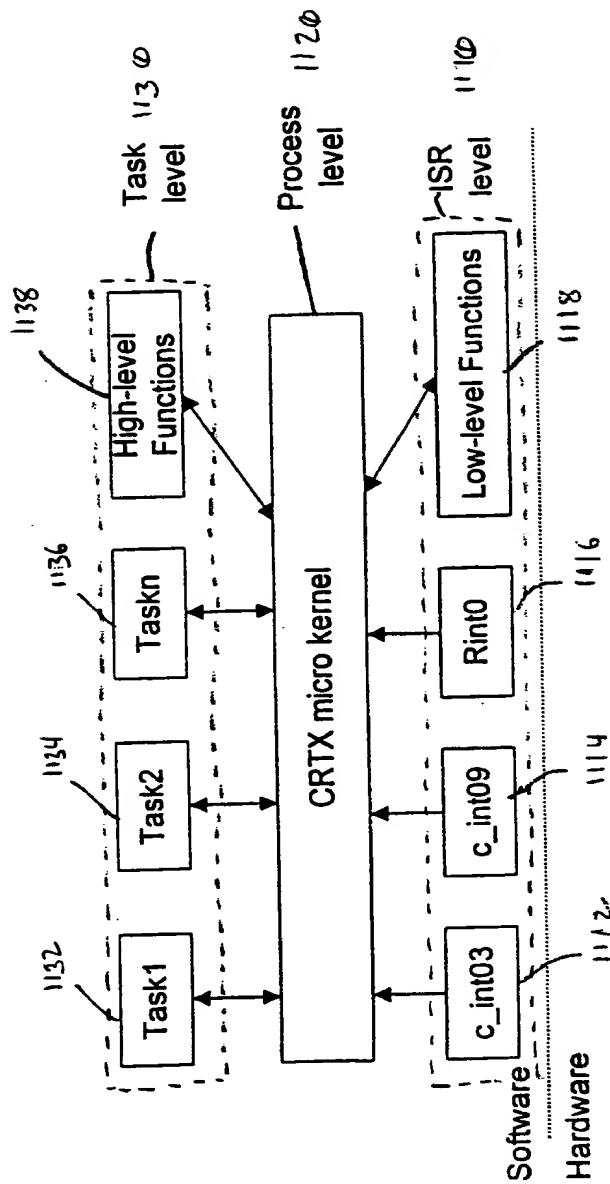


FIG. 11

1200

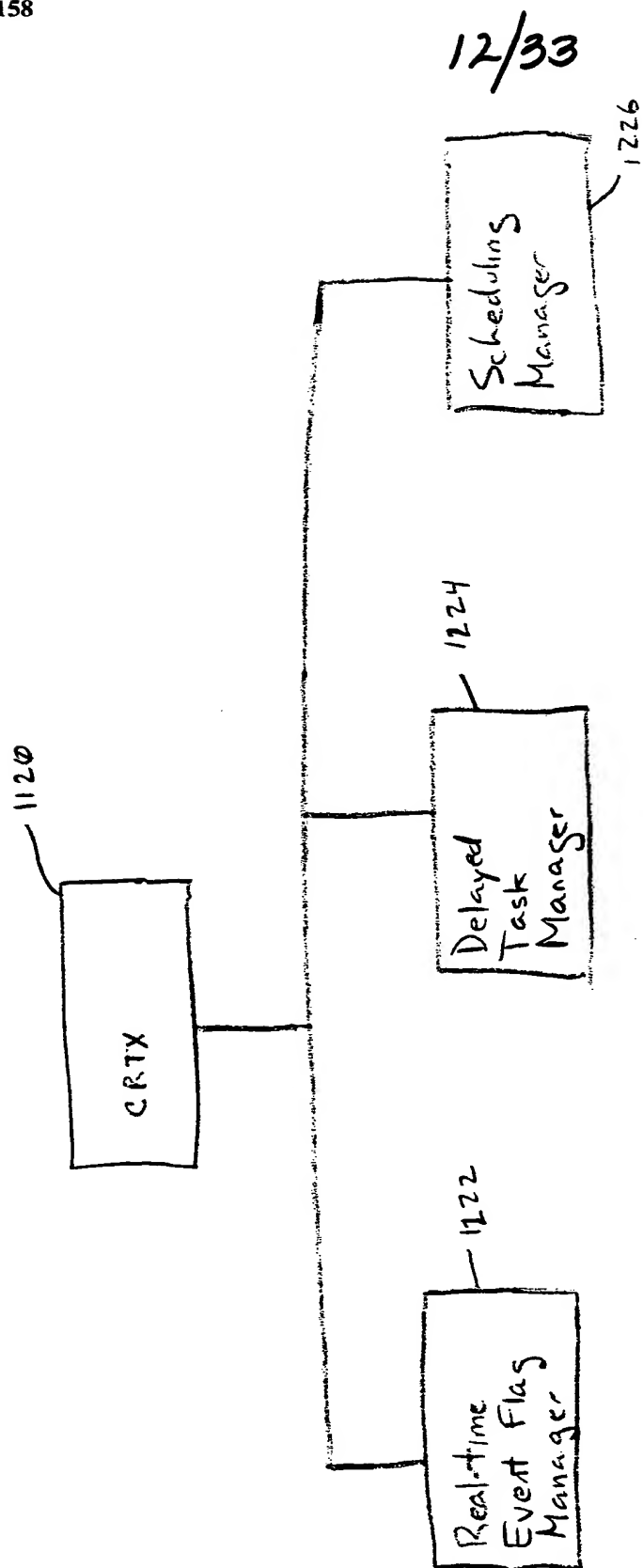


FIG. 12

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FIG. 13A

Task Level Software

Function Name	Function
<i>ARPinIt()</i>	(Initialization Function) ARP table initialization.
<i>c_int00()</i>	(Initialization Function) Main program, initialize the stack pointer, external bus interface, and interrupt vector for TMS320C32.
<i>DMA_initialize()</i>	(Initialization Function) Initialize the DMA0 and DMA1 channels.
<i>ENET_initialize()</i>	(Initialization Function) Initialize the Ethernet controller.
<i>InitHardWare()</i>	(Initialization Function) Initialize the Timer0, Timer1 and serial port.
<i>NameInit()</i>	(Initialization Function) Initialize some SIP headers and SDP body.
<i>SerialPortInit()</i>	(Initialization Function) Initialize the serial port.
<i>ARP_In_task()</i>	Parse ARP input packets
<i>ARPTimer_task()</i>	ARP timer, maintain the ARP table
<i>Call_task()</i>	Call processing
<i>Clock_task()</i>	A clock generates the hour, minute, and second
<i>Codec_task()</i>	A task to call encoding, decoding, ring generation, tone generation or memory loop.
<i>CreateSipCall()</i>	Create a SIP request packet for a call
<i>Ercv_task()</i>	Ethernet packet receiver and IP de-multiplexing.

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Fig. 13B

Function Name	Function
<i>IP_Send_task()</i>	IP multiplexing and Ethernet packet sending.
<i>Key_task()</i>	Key pad monitor and input.
<i>RTP_In_task()</i>	RTP processing.
<i>Sendto()</i>	Send UDP packets to given IP address.
<i>Setting_task()</i>	Setting the E*Phone parameters.
<i>SIP_In_task()</i>	Accept SIP packets, and update call and SIP status.
<i>SIP_task()</i>	SIP status transition task
<i>Tone_task()</i>	Count the active and stop duration for tone or ring.
<i>UDP_In_task()</i>	Accept UDP packets
<i>ARP_Out()</i>	(High-level function) ARP request program
<i>ClearScreen()</i>	(High-level function) Clear all lines on the LCD
<i>CodecConfig()</i>	(High-level function) Schedule a codec task according to the run mode parameter
<i>Disp()</i>	(High-level function) Display a string on the LCD screen
<i>LCD()</i>	(High-level function) Display a character on the LCD screen
<i>LCDClear()</i>	(High-level function) Clear one line on the LCD screen
<i>LinearToUlaw()</i>	(High-level function) Linear data to u-law data conversion

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Fig. 13C

Function Name	Function
<i>Initialization()</i>	(High-level function) Call initialization function and pre-schedule tasks
<i>RTP_para_init()</i>	(High-level function) Generate the random time stamp and SSRC for a RTP session
<i>ScreenScroll()</i>	(High-level function) Scroll the LCD screen for one line upward or downward
<i>SDPParse()</i>	(High-level function) Parse SDP packets
<i>SIPParse()</i>	(High-level function) Parse SIP packets
<i>SIP_Request()</i>	(High-level function) Create SIP request messages
<i>SIP_Response()</i>	(High-level function) Create SIP response messages
<i>SpeechDecode()</i>	(High-level function) Speech decoding
<i>SpeechEncode()</i>	(High-level function) Speech encoding
<i>ToneGenerate()</i>	(High-level function) Generates dial tone, ring back tone, busy tone or alert tone.

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FIG. 13D

Process Level Software

Function
Function prototypes
Header file
Supervisor (kernel)
Trap Manager source file

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FIG. 13E

ISR Level Software

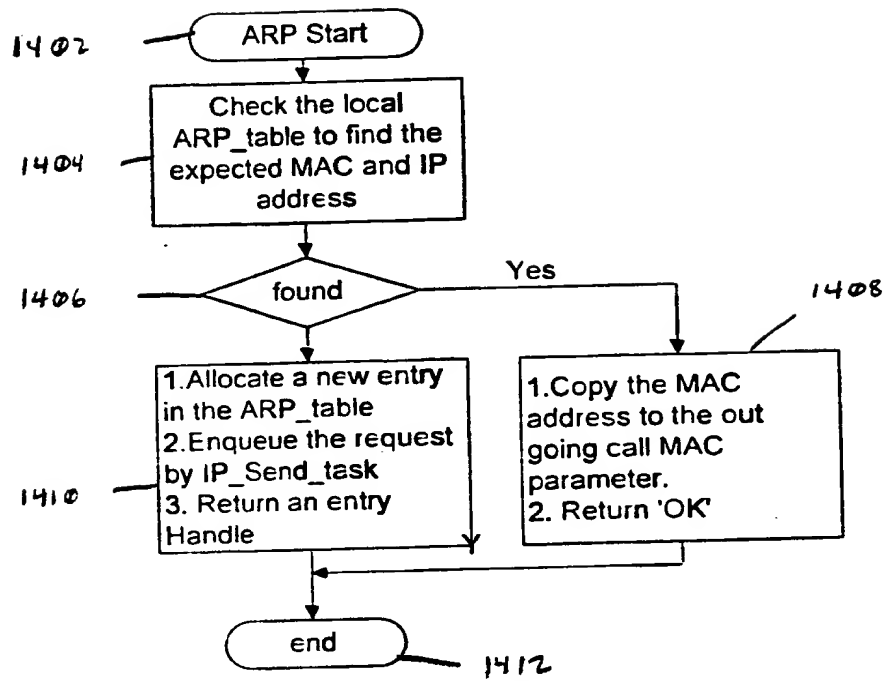
Function Name	Function
<i>c_int03()</i>	Ethernet controller ISR. Triggered on INT3 of TMS320C32 by external interrupt from AM79C940.
<i>c_int09()</i>	System timer ISR. Triggered on TINT1 by internal timer1 of TMS320C32.
<i>Rint0()</i>	A/D and D/A ISR. Triggered on RINT0 by internal serial port interrupt of TMS320C32.
<i>AmpControl()</i>	(Low-level function) Control the speaker volume.
<i>DMA1()</i>	(Low-level function) Start the DMA1 channel.
<i>DMA0_Release()</i>	(Low-level function) Start the DMA0 channel.
<i>DMA_int_set()</i>	(Low-level function) Enable INT1 and INT2 for DMA0 and DMA1.
<i>ENET_reset()</i>	(Low-level function) Reset the Ethernet controller.
<i>ENET_disable()</i>	(Low-level function) Disable the Ethernet controller.
<i>HandSet()</i>	(Low-level function) Control the handset and hands-free switching.
<i>HookState()</i>	(Low-level function) Check the hook state.
<i>Key()</i>	(Low-level function) Key pad check and read.
<i>KeyMap()</i>	(Low-level function) Map the key binary input to ASCII format.
<i>LCDCmd()</i>	(Low-level function) LCD control command.

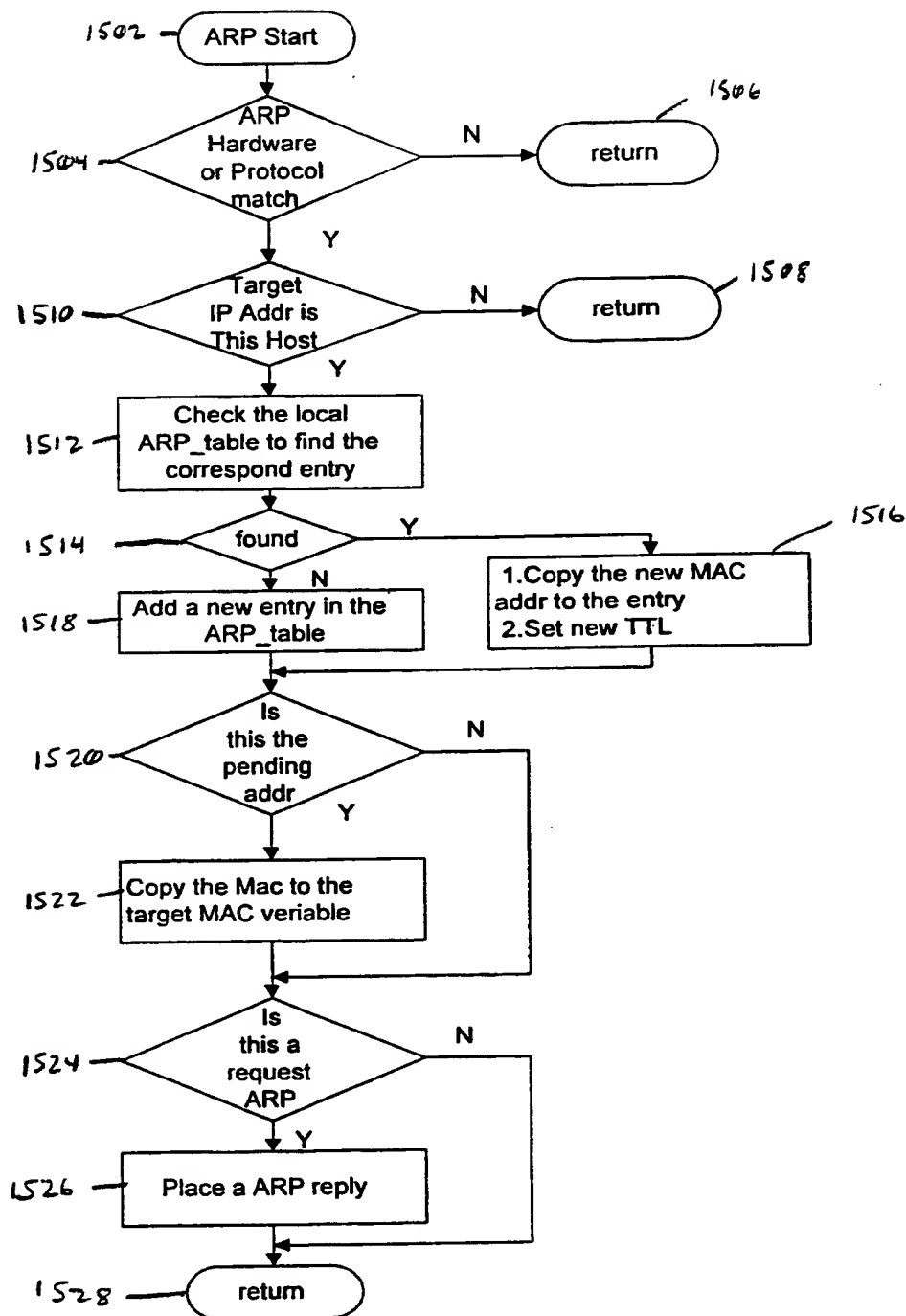
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FIG 13 F

Function Name	Function
<i>LCDWrite()</i>	(Low-level function) Write display data to LCD.
<i>RintEnable()</i>	(Low-level function) Enable the RINT0 for Rint0 ISR.
<i>RintDisable()</i>	(Low-level function) Disable the RINT0.
<i>SerialPortRst()</i>	(Low-level function) Reset the serial port.
<i>TimerEnable()</i>	(Low-level function) Enable the system timer TCLK1.
<i>TimerDisable()</i>	(Low-level function) Disable the system timer TCLK1.

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1400FIG. 14

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1500FIG. 15

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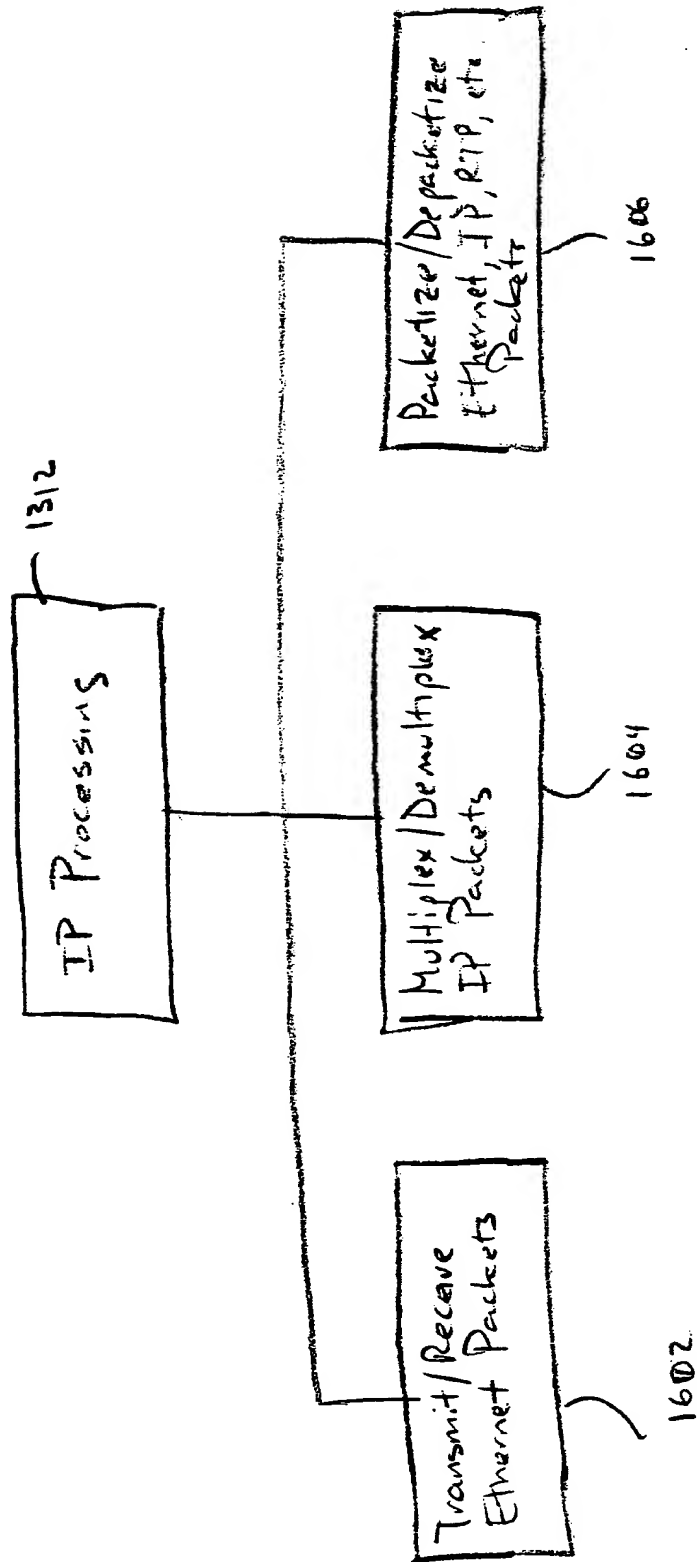


FIG. 16

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```

struct ENetHeader {          /* Ethernet header structure */
    ETA Dest;                /* Ethernet destination MAC address */
    ETA Source;              /* Source MAC address */
    int Type;                /* Ethernet packet type */
};

struct IPHeader {            /* IP header structure */
    int VI_ToS;              /* IP version, header length, and service type */
    int Length;              /* total length */
    int Identify;            /* identifier of the IP packet */
    int FragDff;             /* flags and fragment offset */
    int TTL_Protocol;        /* time-to-live, and protocols */
    int ChkSum;              /* checksum */
    IPA Source;              /* source IP address */
    IPA Dest;               /* destination IP address */
};

struct UDPHeader {           /* UDP header structure */
    int SPort;              /* source port */
    int DPort;              /* destination port */
    int Length;             /* UDP message length */
    int ChkSum;             /* UDP checksum */
};

struct EPACKET {             /* Ethernet receive packet structure */
    struct ENetHeader Enh;   /* Ethernet header */
    struct IPHeader Iph;     /* IP header */
    struct UDPHeader Uh;     /* UDP header */
    int data[MaxUDPLength]; /* data field */
};

```

FIG. 17

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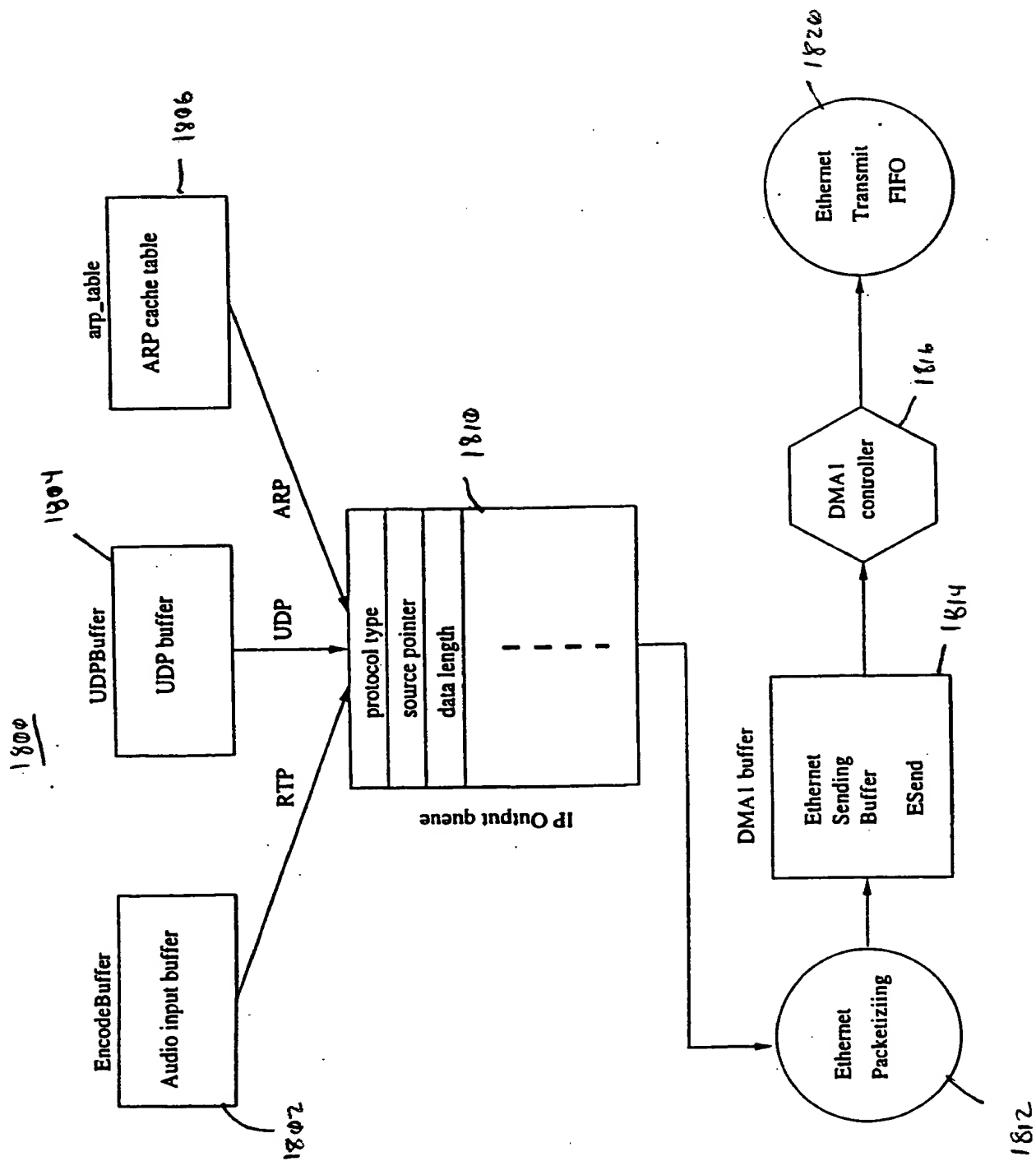
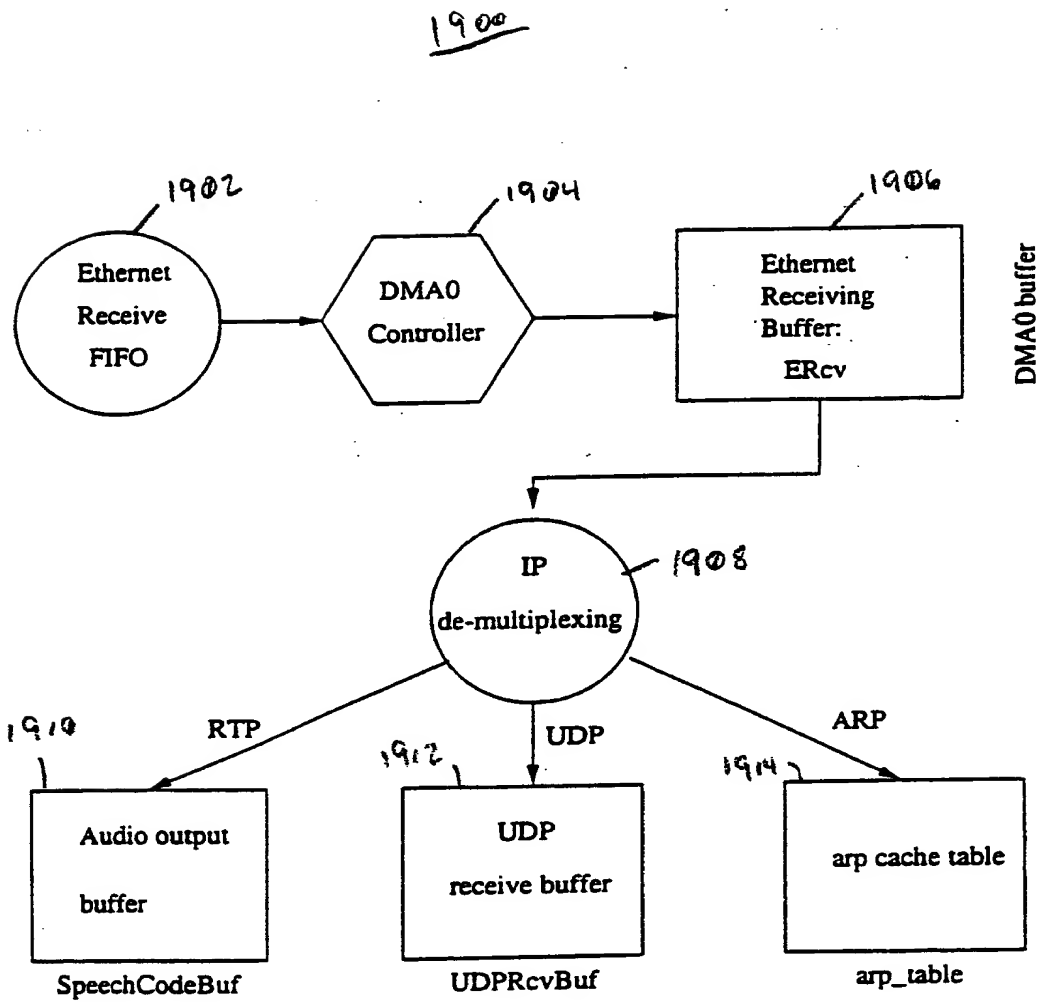


FIG. 18

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FIG. 19

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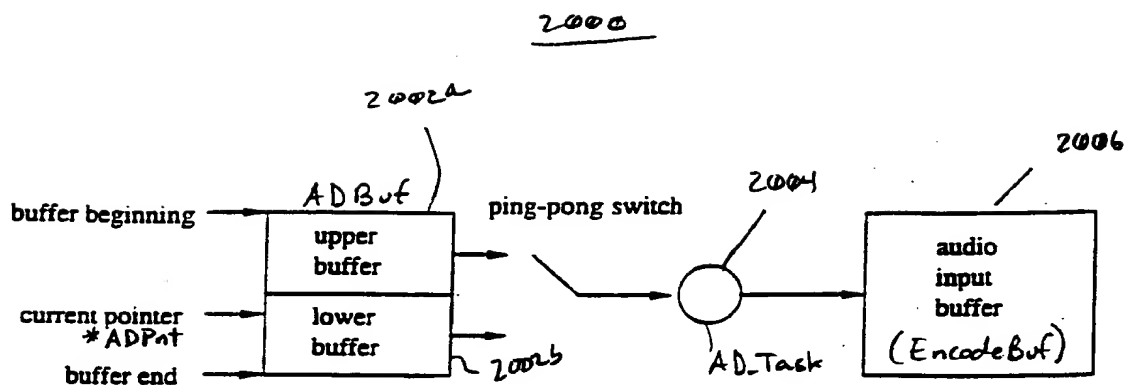


FIG. 20A

(a) A/D buffer update scheme

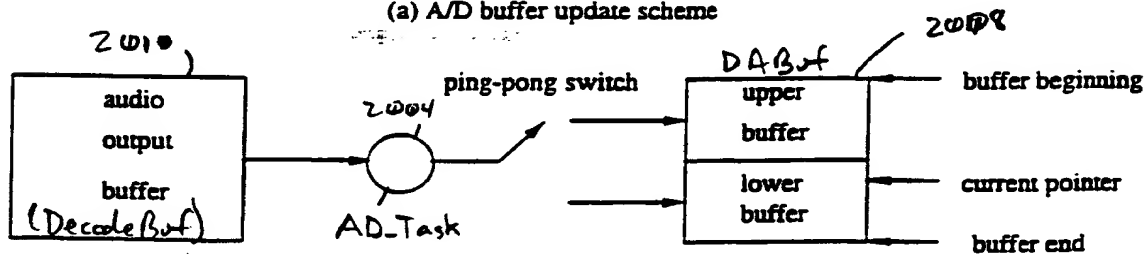
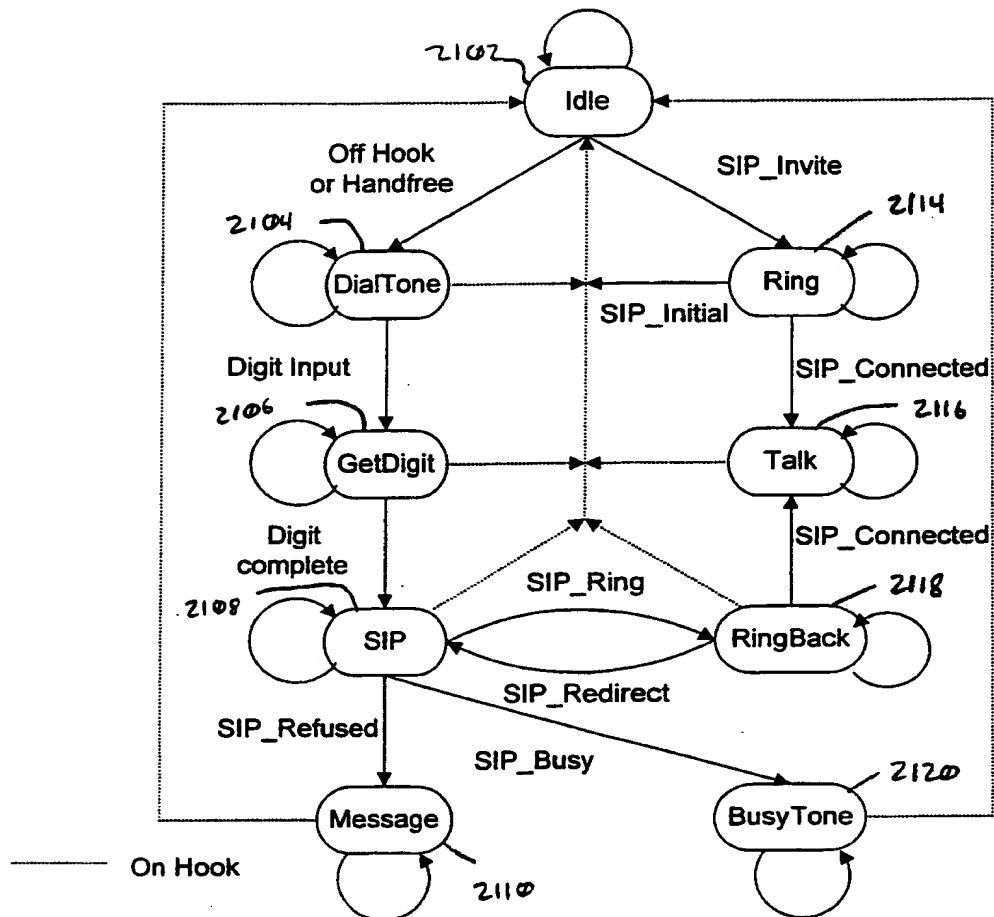


FIG. 20B

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2100FIG. 21

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FIG. 22

Keys	Return Value
Digit keys	'0' ... '9'
Special keys	'*' and '#'
Enter key	'E'
Hands Free	'H'
Redial key	'R'
Upward	'U'
Downward	'D'

FIG. 23

```

struct FuncKey {
    WORD Enter;      Enter key
    WORD Redial;     Redial key
    WORD Up;         Up arrow key
    WORD Down;       Down arrow key
    WORD Digit;      digit keys or special key
    WORD Full;       key buffer full
    WORD Enable;     when set, indicates key input is enabled
    WORD Touch;      any key was pressed
    WORD Alf;        an alphabetic key was pressed.
};

```

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FIG. 24

Port address	Read Write	Bit Value	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
0x820001	W	0	x ⁵	x	x	x	Soft reset	Volume lock	ENET release	Hand free
0x820001	W	1	x	x	x	x	x	unlock	ENET reset	Hand set
0x820001	R	0	x	x	x	x	x	No key input	x	Hook off
0x820001	R	1	x	x	x	x	x	Key touched	x	Hook on

FIG. 25

```

struct Message {
    int ENetXmtST; /* a structure for all messages in the SIP Phone */
    int ENetRcvST0; /* Ethernet transmission packet state */
    int ENetRcvST1; /* Ethernet receiving packet state */
    int ENetRcvST2; /* Ethernet receiving packet state */
    int ENetRcvST3; /* Ethernet receiving packet state */
    int RcvFlag; /* Ethernet receiving packet state */
    int ARPST; /* The receiving speech data is available when SET */
}; /* reserved */

```

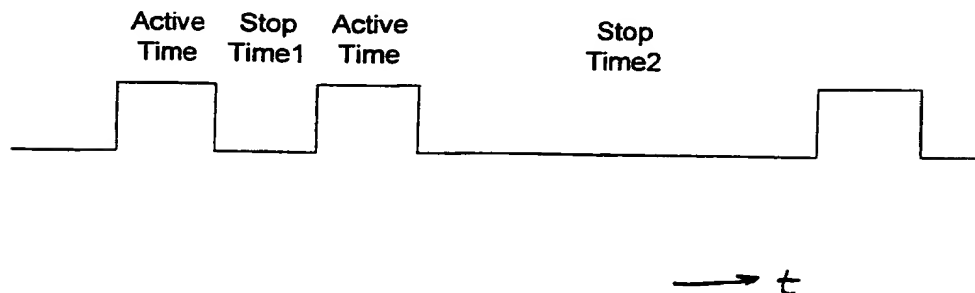
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FIG. 26

```
typedef struct {
    int pt:7 /* payload type */
    int m:1 /* marker bit */
    int cc:4 /* CSRC count */
    int x:1 /* header extension flag */
    int p:1 /* padding flag */
    int version:2 /* protocol version */
    int seq /* sequence number */
    int ts1 /* timestamp least significant 16 bits */
    int ts2 /* timestamp most significant 16 bits */
    int ssrc1 /* Synchronization source least significant 16 bits */
    int ssrc2 /* Synchronization source most significant 16 bits */
    int csrc[1] /* optional CSRC list address */
} RTPHeader;
```

FIG. 27

```
struct ToneType {
    int ActiveTime; /* The period for sound is active */
    int ActiveCnt; /* The counter for the sound during the active time */
    int StopTime1; /* First sound stop period */
    int StopCnt1; /* First sound stop counter */
    int StopTime2; /* Second sound stop period */
    int StopCnt2; /* Second sound stop counter */
}
```

FIG. 28



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```

typedef struct {
    char *s;
    short len;
} string;

/* string type used in message_t structure */
/* start of string */
/* length of string */

typedef enum {
    Initial,
    Proceeding,
    Failure,
    Success,
    Confirmed,
    Calling,
    CallProc,
    Completed,
    Bye
} Tstate;

/* state transition structure */
/* SIP initial state, UAC or UAS */
/* proceeding of the request, UAS */
/* failure, UAS */
/* success, UAS */
/* confirmed, UAS */
/* calling, UAC */
/* call proceeding, UAC */
/* completed, UAC */
/* Bye state, UAC or UAS */

typedef struct {
    method_t method;
    short status;
    string url;
    string via;
    string callid;
    string contact;
    string from;
    string from_display;
    string subject;
    string to;
    string to_display;
    string ts;
    string reason;
    content_t contenttype;
    int contentlength;
    unsigned cseq;
    string body;
    sdp_t sdp;
} message_t;

/* SIP message structure
/* request: method; response: 0 */
/* response: status value; request: 0 */
/* request URL */
/* via header */
/* Call-ID */
/* contact header */
/* From address */
/* From display name */
/* Subject */
/* To address */
/* To display name */
/* timestamp */
/* response reason phrase */
/* contact type header */
/* contact length */
/* sequence number */
/* SDP body */
/* session description */

typedef struct {
    int flag;
    int ua_state;
    int status;
    message_t m;
    char * udp;
    char * local;
    sockaddr peer;
    sdp_t sdp;
    Tstate state;
    int t1;
    int t2;
} call;

/* call structure */
/* SET for effective, RESET for clear */
/* Not current call:0; UAC:1; UAS:2 */
/* current response status */
/* SIP message */
/* receive SIP packets pointer */
/* UAC request packet pointer */
/* peer host IP address */
/* sdp backup */
/* SIP transition state */
/* T1 timer */
/* T2 timer */

```

FIG. 29

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3000

Fig. 30

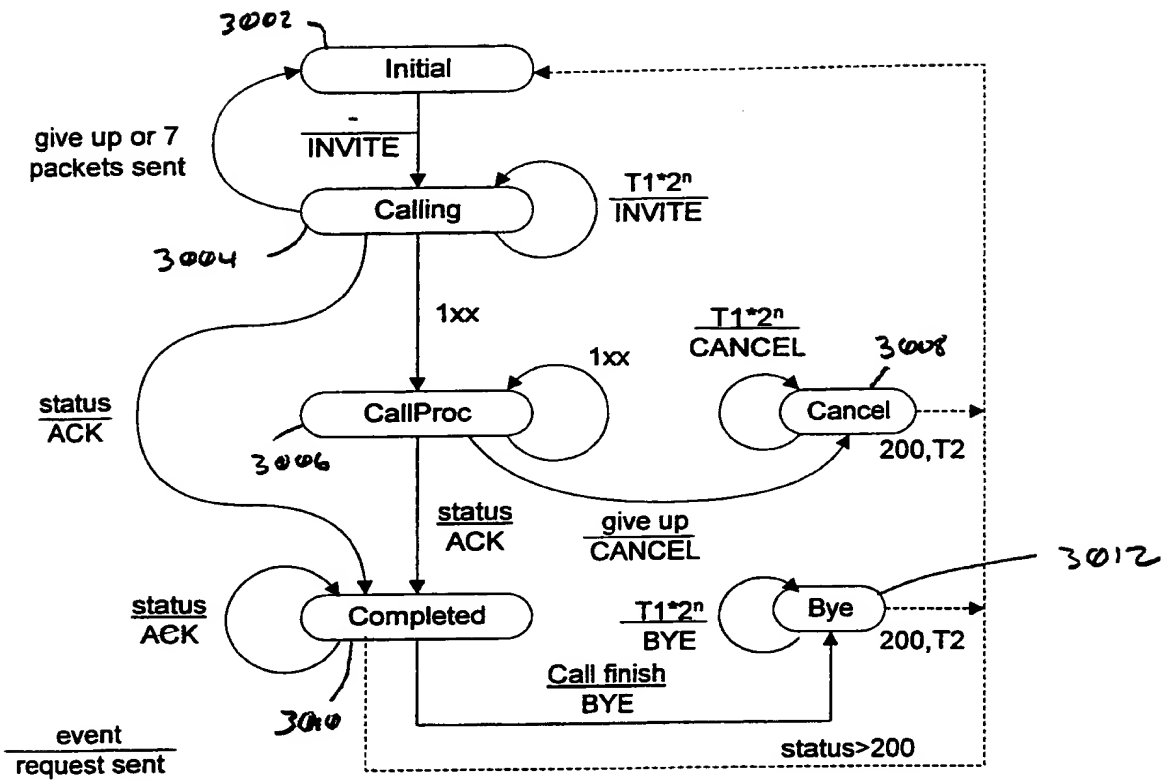
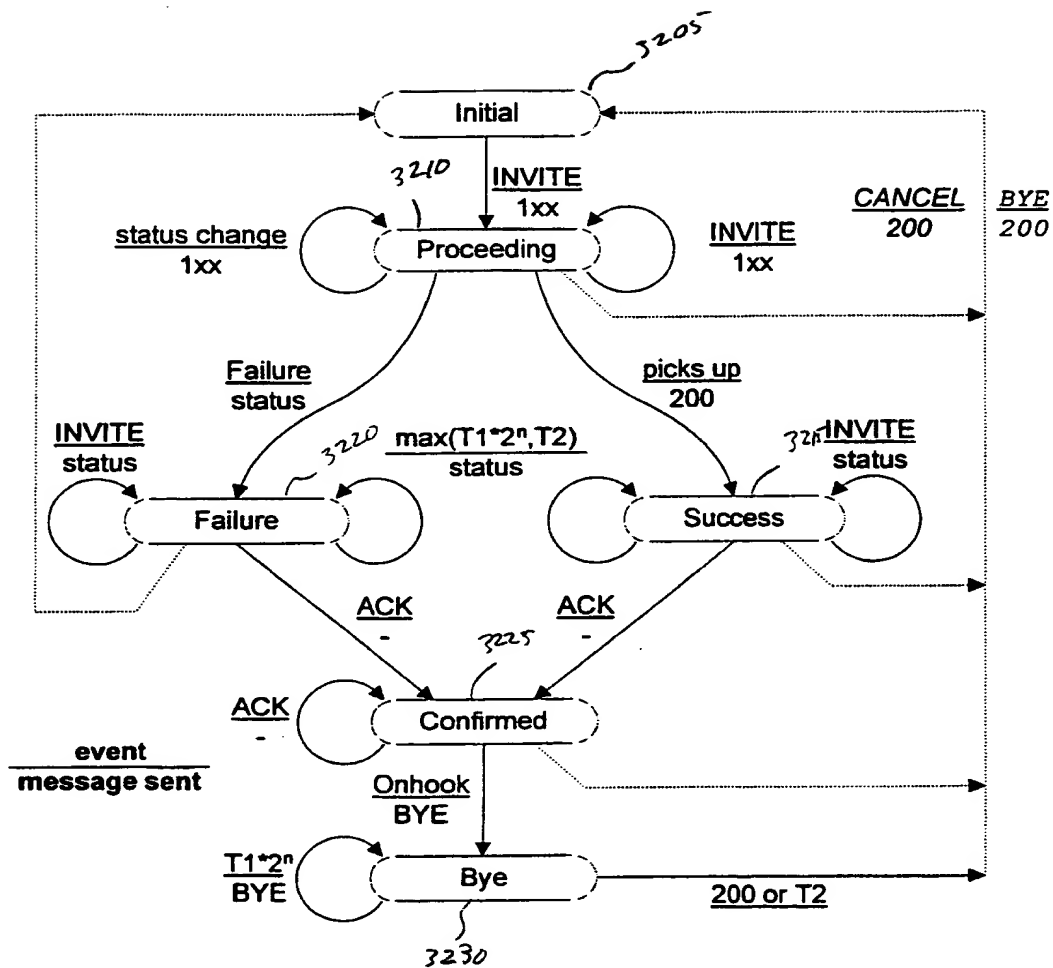


Fig. 31

Message received	SIP_Status
100	SIP_Trying
18x	SIP_Ring
200	SIP_Connected
3xx	SIP_Redirect
4xx, 5xx	SIP_Refused
6xx	SIP_Busy

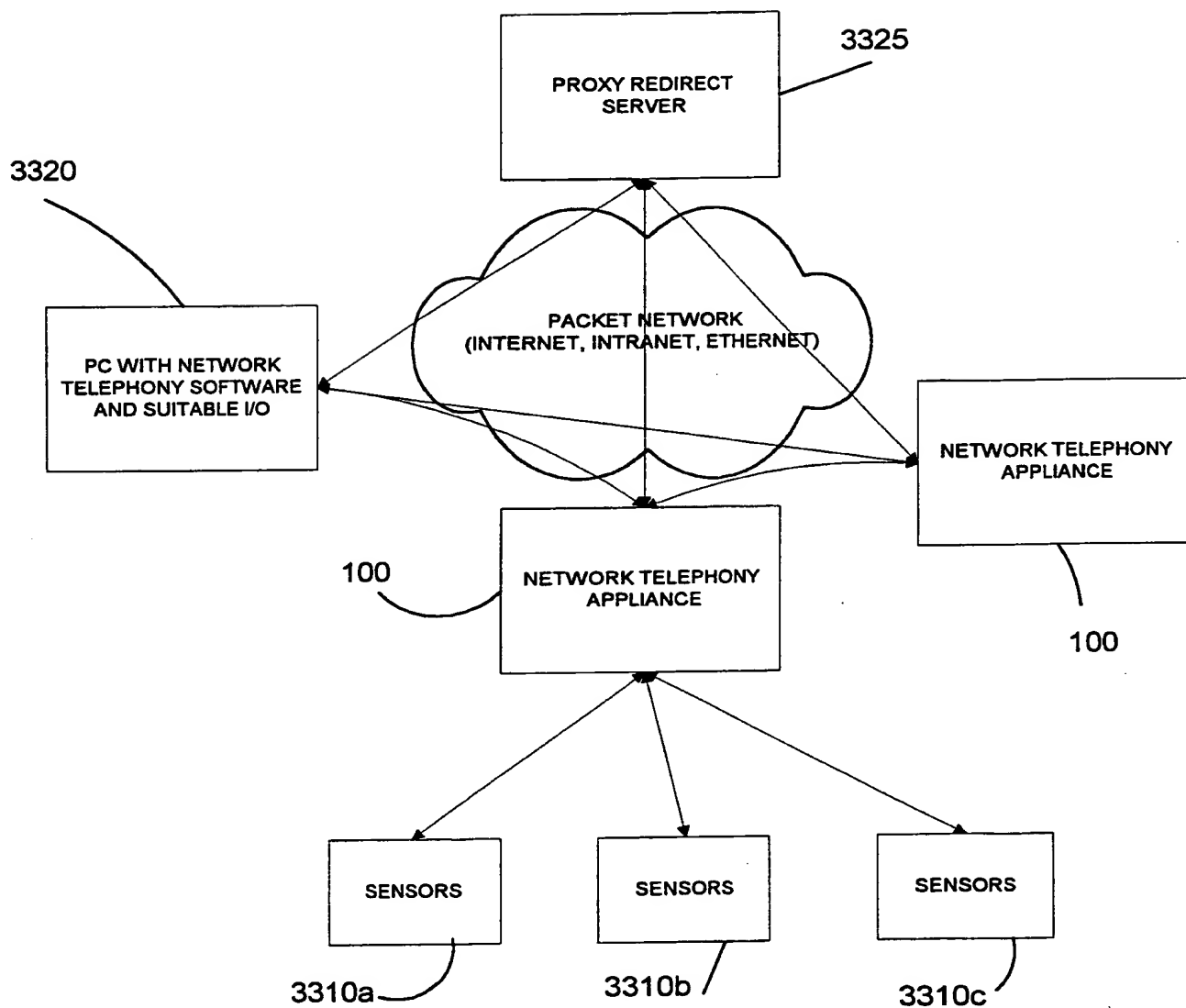
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FIG. 32



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FIG. 33



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/40175**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : H04L 12/66; G06F 17/00, 15/16

US CL : 370/352; 709/204, 227, 231

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/352; 709/204, 227, 231

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

East

search terms: internet intranet telephony ARP UDP DSP

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 5,867,495 A (ELLIOTT et al) 02 FEBRUARY 2000, col. 1, lines 5-34, col. 8, line 28 - col. 9, line 53.	1-56
Y,P	US 6,009,469 A (MATTAWAY et al) 28 DECEMBER 1999, col. 1, line 60 - col. 3, line 27.	1-65



Further documents are listed in the continuation of Box C.



See patent family annex.

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L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

11 SEPTEMBER 2000

Date of mailing of the international search report

04 OCT 2000

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Facsimile No. (703) 305-3230

Authorized officer

PAUL KANG

Telephone No. (703) 305-9000

Rugenia Zogan